The Fourche Creek Watershed Initiative

HUC 11110207 (Lower Arkansas - Maumelle)

A Hypoxia Watershed Project Prepared for the **U. S. Environmental Protection Agency** by **Audubon Arkansas**

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December 2003

Audubon

An Abstract of the Fourche Creek Watershed Initiative

The Fourche Watershed drains and filters over 99 % of the Little Rock Metropolitan Area. In 2003, Fourche Creek was identified by EPA as federal priority with its' Brownfield Designation. The Fourche Creek Watershed is vitally important not only because of its' ability to filter Central Arkansas, but because of its' potential to increase the quality of life for Central Arkansas residents. Audubon has developed a collaborative restoration network of partners prepared to undertake the single largest urban environmental restoration project in Arkansas aimed at decreasing hypoxia contaminants in the watershed. This project includes demonstration, education, restoration, and unparalleled partnerships. Thanks to EPA's Nonpoint Source Reduction Program, the groundwork for making this effort one of the most successful urban restoration projects in U.S. history has been laid. The Watershed Initiative Grant is Arkansas' contingent hope for continuing and expanding the education and restoration the Fourche Creek Watershed.

Workplan Description

The Fourche Creek Watershed is arguably the most important urban watershed in the state for ecological, economic and social reasons. The watershed drains and filters runoff from Arkansas' largest and capital city of Little Rock and encompasses at least six third-order streams and numerous tributaries that discharge into Fourche Creek. The 1992 Pulaski County Ecological Assessment noted that the170-square mile basin "has been identified for its great value to catch, store, and release floodwater from the Little Rock Area." The Arkansas River is one of the nation's largest tributaries of the Mississippi River and the city's wastewater treatment plant is located immediately above the Fourche/Arkansas River confluence. The City of Little Rock cites the economic value and savings from natural purification in the Fourche Bottomlands to be in the millions of dollars, and the implementation of this project further increasing those benefits and savings.

The bottoms of the Fourche Watershed are populated predominately by minority communities of Hispanics and African Americans. In line with Audubon's mission, these minority communities will be the educational focus in an attempt to reach one of every four children in the watershed with watershed outreach.

Despite decades of neglect and abuse, Fourche Creek supports over 50 species of fish, stands of three hundred year old bald cypress, and core bottomland region that still maintains its wetland functions. Equally significant is the escalating importance of the watershed as an urban restoration area for education and demonstration. An estimated 90,000 acres of the watershed's 108,000 acres lie within the city limits of Little Rock. The economic and social importance of a revitalized watershed is of tremendous importance to Central Arkansas.

The greatest threats to the Fourche Watershed include: sedimentation; development and sprawl; increased impervious surfaces; floodplain encroachment; and a lack of understanding and education concerning water resources. Audubon's Fourche Creek Watershed Plan, will: **1)** revitalize wetland function through reforestation and stream bank/wetland restoration; **2)** increase habitat and wetland floodwater storage capacity; **3)** develop education and demonstration opportunities on public and student restoration projects; **4)** teach and encourage Developers BMP's while reducing non-point and point source pollution; **5)** establish model ordinances and more sustainable methods for "Operations and Maintenance"; **6)** develop watershed awareness outreach and media campaign; **7)** facilitate large scale stream restoration project; **8)** reduce floatable trash; **9)** facilitate long-term collaboration of watershed partners to address and achieve sustainable watershed policies; **10)** reclaim mined property into wetlands and retention basins; and **11)** conduct a hydrological evaluation of the Fourche Watershed.

A steady increase in public awareness and involvement, improvements in habitat and water quality, and a decrease in hypoxia contaminants are primary goals of this project. No extra time is needed to "establish" this program, as the momentum already exists to succeed. Audubon will use the three years of this initiative to build the permanent appreciation and protection for the Fourche Watershed.

To date, Audubon has completed a Nonpoint Source Program restoration project with rave success, and Audubon was awarded a second grant to continue its work within Fourche Creek, that ends in early 2004. Through a coalition of over 30 partners, Audubon has lead the restoration of Fourche Creek. The EPA Watershed Initiative Program is the best opportunity to take current project success to a higher level by expanding BMP's and lessons learned throughout the entire watershed.

Project Description - Fourche Watershed Initiative Project Goals

The tasks and goals laid out in this proposal are all aimed toward short and long-term improvements in habitat and water quality within the Fourche Creek Watershed. These project goals build on the momentum of Audubon's Fourche Creek Restoration and Education Project that ends in early 2004. The watershed initiative project tasks follow:

Task 1: Revitalize wetland functioning through: stream bank stabilizations (4,500 linear feet of rock vane/crib wall protection); reforestation (50 acres); stream corridor enhancement (4,500 linear feet); establishment of catchment and storm water retention basins (six total); reduce sediment by 5%. These restoration efforts will reduce amounts of chemicals and transporting sediments out of the Fourche Watershed that cause hypoxia. Task 1 will commence upon project award. **Monitoring/Evaluation/Results:** Wetland function improvement will be determined by water quality analysis (18 sites every 3 weeks) and biological assessments (conducted every quarter). Results will be compared to existing baseline data. Success will also be evaluated by the assessment of biological indicators and aquatic composition before and after projects. Biological and environmental quality should drastically improve at project sites. Quarterly record keeping will confirm accomplishment of above stated tasks.

Cost: ***$259,417*** **Federal:** ***$151,143*** **Match:** ***$108,274***

Task 2: Increase wetland habitat protection and floodwater storage capacity by bringing 20 critical acres of stream corridors in the floodplain into perpetual conservation easement status. The conservation easement as a protection technique will be the subject of demonstrations and training, especially for other-watershed cities. Task 2 will commence upon project award. **Monitoring/ Evaluation/Results**: Accomplishment of perpetual conservation easements will indicate success. Once easements are accomplished, annual site visits to assure compliance will

be conducted by Audubon on a multi-year basis and far beyond the funding life of this project. Changes in this acreages' biodiversity will be documented twice a year throughout the life of this project. Quarterly reporting on easement progress will occur. Workshops will highlight easement processes and success. **Cost:** ***$205,851*** **Federal:** ***$109,453*** **Match:** ***$96,398***

Task 3. Maximize hypoxia and watershed-learning opportunities in the project through the following strategies: 1) develop three stream restoration projects with the Little Rock School District (LRSD) K-12; 2) conduct six teacher trainings (approximately 30 teachers) with Little Rock School District; 3) hold workshops at demonstration sites for 300 students for K- 12 students; 4) involve local college students (6 total) to help conduct and implement restoration tasks; 5) provide demonstration sites for employee training of government agencies (three sessions); 6) expand current education/restoration efforts with three additional Fourche Creek Watershed communities (Shannon Hills, Bryant and Alexander); 7) develop and maintain Fourche Watershed Initiative web site for information exchanges, posting of queries, sharing of best management practices and case studies for students, teachers, governments, communities and any interested citizens; 8) provide public with recreational opportunities that attract audiences to watershed learning experiences (Establish an 8-mile canoe trail complete with watershed signage and conduct a minimum of 12 field trips to sites over course of project); 9) conduct 50 Fourche Watershed Initiative and Hypoxia presentations over the life of the project to: civic/community groups; federal, state and local agencies; neighborhood associations; businesses; and non-profits; and 10) disseminate Fourche Watershed and Hypoxia education materials and other education outreach programs. **Monitoring/Evaluation/Results:** Achievement of specific activities outlined above will be monitored and reported on a quarterly basis. Before and after testing of informational message will be conducted with students.

Cost: ***$274,295*** **Federal:** ***$164,411*** **Match:** ***$109,884***

Task 4. Work with 10 Developers on BMP design and implementation. Audubon will help design and coordinate with developers to implement BMP's that will: 1) minimize environmental effects from impervious area; 2) filter contaminants; and 3) increase stormwater retention time. These BMP's will focus on reduction of hypoxia causing elements; specifically reduce sediment loading and nutrients by five percent. Cost analysis and water quality results will be compared to those without BMP's. Work would commence within the weeks upon project award.

Monitoring/Evaluation/Results: Water quality analysis from 18 sites will be analyzed by the Arkansas Department of Environmental Quality. Baseline data will be compared with water quality studies during the life of the project. Changes in hydrology, stream morphology and contaminant concentrations will be evaluated during, before, and after work at new development sites where BMP's are implemented. Biological Assessments will be conducted using biological indicators. Costs associated with BMPs will be compared to traditional development techniques.

Cost: ***$184,654*** **Federal:** ***$112,356*** **Match:** ***$72,298***

Task 5. Work with the City of Little Rock and the U.S. Army Corps of Engineers to establish new city ordinances and sustainable methods of "Operations and Maintenance". This includes the evaluation of land use changes, increases in impervious surfaces, and the appropriate revisions to the current Fourche Creek O&M Manual (Task 11). These negotiations will begin within the first project quarter.

Monitoring/Evaluation/Results: Changes to O & M Manual that exclude the bulldozing of streambeds and streambanks and include more sustainable maintenance methods. City ordinances that support and encourage sustainable measures of development and stormwater management will be in place.

Cost: ***$170,953*** **Federal:** ***$92,228*** **Match:** ***$78,725***

Task 6. Develop public outreach and media campaign for watershed awareness through the Audubon Outreach Coordinator. Elevate public understanding of watershed values -environmental, economic, educational, and recreational by implementing a watershed media/public relations campaign that focuses on the reduction of the hypoxia zone, elimination of excessive nutrients and sediment, and the provision of alternative solutions**.** This task will achieve the following: 1) reach at least 500,000 people in the state with watershed information through the media (ten print articles; five TV spots; five radio interviews; at least three other major newspaper and/or magazine stories annually and develop a PSA on Fourche Watershed for TV and radio); 2) reach 500 people with personal watershed experiences through recreational activities (guided floats, guided trail tours, and workshops); 3) secure corporate and other partnership to promote Fourche Watershed outreach activities to schools and Pulaski County's 360,000+ citizens and; 4) coordinate watershed activities participation with groups, agencies, and non-profits. **Monitoring/Evaluation/Results:** Audubon will conduct a baseline survey (sampling) of Central Arkansas residents' knowledge and understanding of watershed issues. After completing media goals listed above, Audubon will conduct a follow-up survey near project's end to determine level of awareness raised. Progress on specific activities will be reported on quarterly. This task will commence immediately upon project award.

Cost: ***$226,868*** **Federal:** ***$144,605*** **Match:** ***$82,081***

Task 7: Audubon will facilitate a large-scale stream restoration project. This project will consist of restoring a stream segment that is currently either a concrete trapezoidal ditch, or is being improperly managed (instream mowing and dirt removal) by the City of Little Rock.

Audubon has selected three example streams and locations to be considered for restoration; Swaggerty Creek, Rock Creek, and/or Grassy Flats - all major tributaries to Fourche. Audubon will complete work on at least one reach of these streams and if time and budget allow, Audubon will restore all three. **Monitoring/Evaluation/Results:** Before and after each project water quality samples will be conducted and analyzed. Audubon aims to show the importance of sediment and nutrient deposition rates that occur in a natural stream settling. Biological and aquatic assessments will be conducted before and after projects. Project results will be presented across the state and at national events. **Cost:** ***$255,319*** **Federal:** ***$162,895*** **Match:** ***$92,424***

Task 8: Reduce floatable trash by 20 percent. Trash collection stations will be established at appropriate locations. Floatable filters will be installed at strategic sites and cleaned regularly. Volunteer trash clean-up events with groups and schools will take place at least five times a year with groups and schools for a total of 15 clean up events. An education and outreach component will focus on anti-litter campaign. Clean ups will begin immediately and continue on a regular schedule. **Monitoring/Evaluation/Results:** Baseline trash data has already been collected. Audubon will monitor success each quarter. Trash will be weighed and recycled when possible. **Cost:** ***$176,677*** **Federal:** ***$103,028*** **Match:** ***$73,649***

Task 9: Facilitate long-term collaboration of partners to address and achieve watershed policies that are based on good planning and sustainable development. This coalition will maintain a long-term interest and investment from the established benefits provided to each partner; e.g., the savings to the City of Little Rock from properly functioning wetlands. One of the significant aspects of the Fourche Watershed is that so many people have so much to gain by its restoration. Audubon will work strategically to cultivate and develop partner interest by creating win/win opportunities in this project. This coalition has already been established by

Audubon and will continue to participate as planned in this project. The Fourche Watershed Coalition will provide some of the greatest match contributions to the project (see budget).

Monitoring/Evaluation/Results: Audubon has a long-term interest and investment in the restoration of the Fourche Watershed. Audubon will continue to maintain and build the watershed partner coalition as an integral program element of what is a long-term commitment to the Fourche Creek watershed initiative. Audubon will ensure a minimum of 30 partners participation in the Fourche Watershed Initiative.

Cost: ***$161,27*** **Federal:** ***$91,228*** **Match:** ***$70,049***

Task 10: Reclaim mined property into wetlands and retention basins. Audubon will restore formerly mined property into vegetative wetlands. The property will also be designed to hold stormwater during large storm events in attempts to control excess amounts of floodwater that are threatening to alter the watershed. This area will provide new habitat for wildlife and demonstration opportunities for planners, developers, and the general public.

Monitoring/Evaluation/Results: Flow will be measured before and after the project as well as biological and aquatic inventories. The storm water volume reduction will be examined against the completed watershed inventory of flow and increased impervious areas study.

Cost: ***$200,344*** **Federal:** ***$111,603*** **Match:** ***$88,741***

Task 11: While the City of Little Rock has grown more than 56% in land development and sprawl, it has grown a merely 3% in population over the last 20 years. A hydrological evaluation of land use changes and increased impervious surfaces within the Fourche Watershed. This data will be an important tool in the revision efforts of the current City of Little Rock and Corps of Engineers Fourche Creek O&M Manual (Task 5). This data will provide a large-scale perspective of the watershed and help to further identify developing watershed threats.

Monitoring/Evaluation/Results: This compiling of this data would begin upon project commencement. Compiled data should be completed and produced by within the first year of the project. **Cost:** ***$187,227*** **Federal:** ***$97,428*** **Match:** ***$89,799***

Project Complementarity with other Programs and Mandates. The Fourche Watershed Initiative project complements and supports the following state and federal programs and mandates: the EPA 319 Non-Point Source Reduction Program; the EPA Environmental Justice Program; the EPA Urban Streams Initiative; the EPA Wetland Development Program; the EPA American Heritage Rivers Initiative; U.S. Army Corps of Engineers Flood Prevention and Flood plain Protection Program; National Fish & Wildlife Service's Bird Habitat Initiative Program; the Clean Water Act of 1972; EPA Reg. 2 (storm water standards); ADEQ's Preservation and Restoration Program; City of Little Rock "City in a Park" Master Plan for Parks and Recreation; Wetland & Riparian Zone Tax Program; and the Clean Air Act (Carbon Sequestration of Wetlands).

Qualifications of Project Leaders

Kenneth L. Smith, Project Executive Director: Prior to joining Audubon as Executive Director in 2001, Mr. Smith served as Assistant Secretary for U.S. Fish Wildlife and Parks. Mr. Smith also served as Deputy Chief of Staff to President Bill Clinton and Secretary Bruce Babbitt in the U.S. Department of the Interior. Mr. Smith holds a B. S. degree in Biology and Chemistry and a MS degree in Biology.

Mr. Rob Fisher, Project Leader: Mr. Fisher joined the Audubon staff in 2001 as the Director of Conservation. He currently directs Audubon's conservation programs and projects. Prior to joining the staff of Audubon, Mr. Fisher worked at American Rivers in Washington, DC. He holds a B.S. and a Masters of Science in Forestry and Environmental Resources.

For additional qualifications of key project staff and proposed roles, see Appendix 5.

Description of Outreach Activities - The Fourche Creek 319 Project was planned as a national model for a collaborative, community-based initiative to focus on reducing nonpoint source pollutants and restoring urban watersheds. The Fourche Watershed Initiative Project offers a concrete plan to expand demonstrations and educational opportunities to at least six communities in Arkansas. Innovative and broad ranging partnerships already established by Audubon bring breadth, depth, and scope to the table to focus of best management practices and lessons learned from effective watershed restoration projects. Implementation of the project is proceeding smoothly and ahead of the project schedule. The project's success is creating a groundswell of excitement and support in the broader Little Rock community. This success is fueled by Audubon's media savvy and resultant high level of media attention. For specific strategies and goals for transferring knowledge gained to other areas and a detailed description of activities and goals for an information and outreach component please refer to Task 6 and 9.

APPENDIX 1

Project Budget for Fourche Creek Watershed Imitative

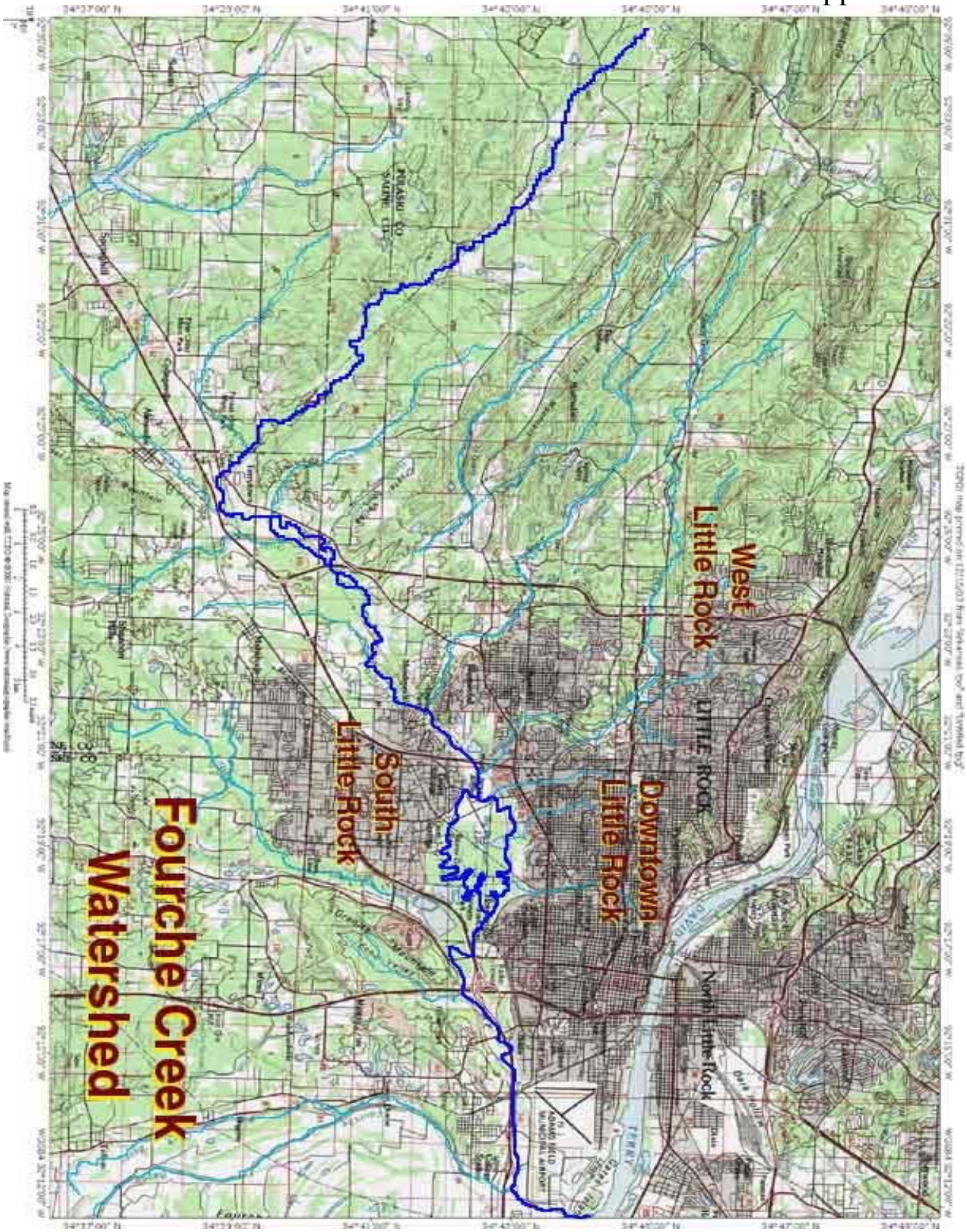
Personnel	Annual Salary	Number in Position	m/yrs	**3 year** Cost	Federal	**Match**
Audubon Director	$108,160	1	1 yrs	$108,160	$0	$108,160
Watershed Planner	$60,000	1	2 yrs	$120,000	$100,000	$20,000
Fourche Creek Project Coordinator	$48,000	1	3 yrs	$144,000	$140,000	$4,000
Fourche Creek Educator	$35,000	1	3 yrs	$105,000	$103,000	$2,000
Fourche Creek Outreach Coordinator	$35,000	1	3 yrs	$105,000	$105,000	$0
Fourche Creek Field Staff	$32,000	1	3 yrs	$96,000	$96,000	$0
Audubon Financial Administrator	$35,000	1	1.5 yr	$52,500	$0	$52,500
National Audubon Educator	$78,000	1	1 yrs	$78,000	$0	$78,000
Subtotal				**$808,660**	**$544,000**	**$264,660**
Fringe Benefits 28 % 3 yrs.						
Total Fringe				**$226,425**	**$152,320**	**$74,105**
Non Audubon Staff						
University Student Interns	$12,000	2	3 yrs	$72,000	$72,000	$0
Hydrologist/BMP Specialist (sandy/matt)	$25,000	2	3 yrs	$150,000	$150,000	$0
L.R. Parks Director	$95,000	1	.6 yrs	$57,000	$0	$57,000
L.R. Parks Deputy Director	$57,000	1	1.05 yrs	$59,850	$0	$59,850
L. R. Parks Planner II	$36,500	1	.9 yrs	$32,850	$0	$32,850
L.R. Public Works Environmental Engineer	$71,741	1	.1668 yrs	$11,967	$0	$11,967
L.R. Maintenance Crew	$25,000	8	.1yrs	$12,500	$0	$12,500
L.R. Planning Division	$40,000	2	.3 yrs	$24,000	$0	$24,000
ADEQ (tech-services)	$69,736	1	. 2 yrs	$13,947	$0	$13,947
ADEQ (tech assistance)	$75,000	1	.3yrs	$22,500	$0	$22,500
Arkansas Forestry Commission -County Forester	$52,000	1	.57 yrs	$29,640	$0	$29,640
Arkansas Game and Fish Commission	$77,000	3	.2yrs	$46,200	$0	$46,200
Riggs Incorporated	$75,000	1	.4 yrs	$30,000	$0	$30,000

Total		**25**	**10.8yrs**	**$562,454**	**$222,000**	**$340,454**
Travel for 3 years						
Mileage (75,000 @ .36) 25k miles per/yr.				$27,000	$25,000	$2,000
Total Travel				**$27,000**	**$25,000**	**$2,000**

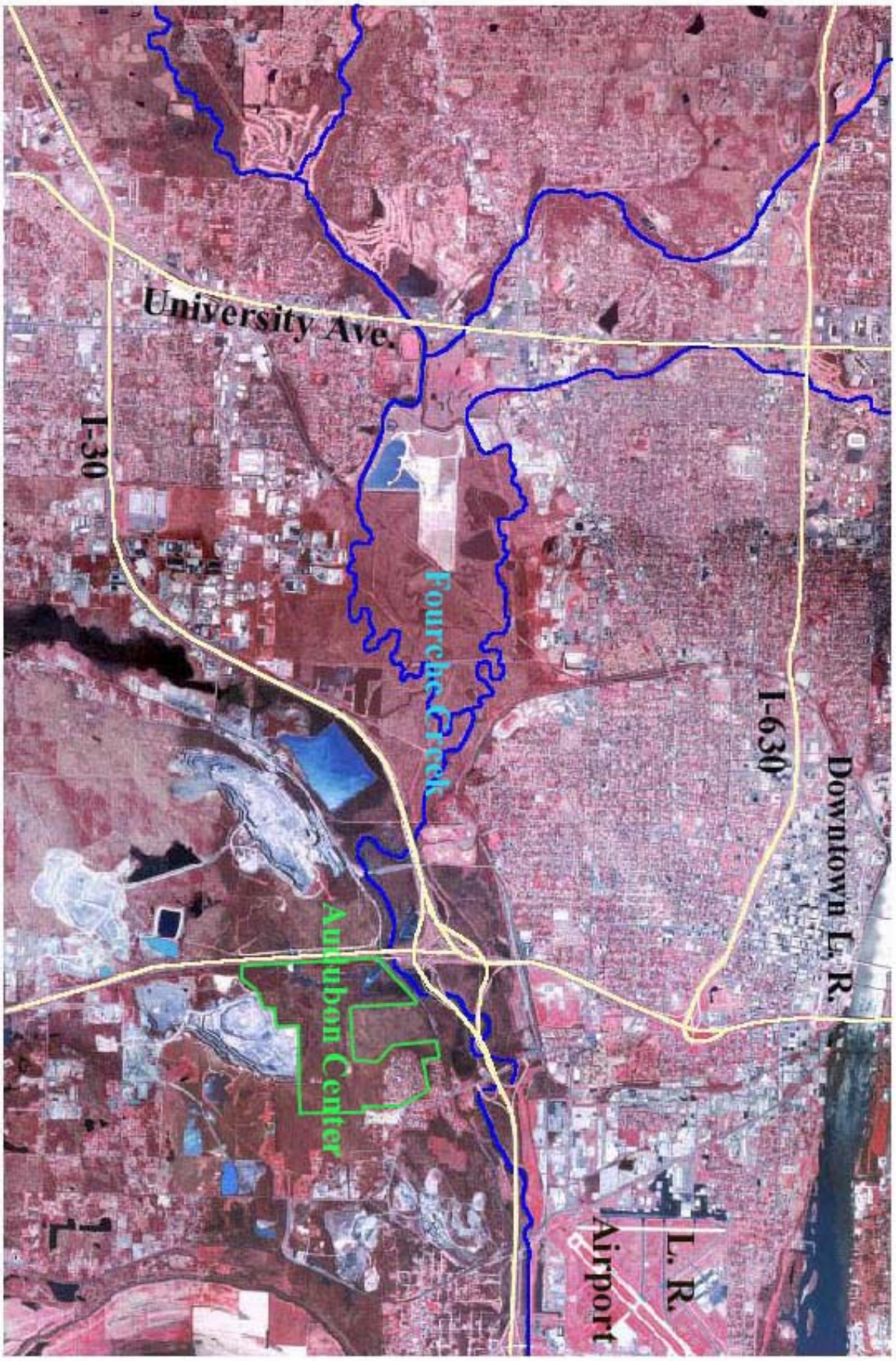
Equipment					
Heavy equipment (backhoe, truck, etc.)			$45,292	$0	$45,292
6 Computers strictly for use on this project and will continued to be used for the continuation of this project.			$12,400	$8,400	$4,000
Global Positioning System – 3 units and a download station			$6,500	$6,000	$500
2 PowerPoint Projector			$4,000	$2,000	$2,000
2 Digital Cameras and port			$1,000	$500	$500
Office Space Rental		$21,600 p/yr	$64,800	$32,400	$32,400
Water Quality Testing Equipment			$29,000	$0	$29,000
Water Quality Analysis			$75,000	$25,000	$50,000
Mobile Phones (3 phones and operation cost)			$8,640	$8,640	$0
Equipment Maintenance (3 years)			$15,000	$10,000	$5,000
Video Camera (for education documentation)			$2,800	$2,800	$0
Flat bottom boat			$1,000	$0	$1,000
Boat Motors			$700	$350	$350
Canoes (6)			$5,400	$1,800	$3,600
Equipment Trailer			$700	$700	$0
Wench			$600	$600	$0
2 Auto samplers / flow meters			$20,000	$20,000	$0
Survey Equipment			$5,000	$5,000	$0
Total Equipment			**$297,832**	**$124,190**	**$173,642**
Supplies					
Waders, Boots, protective equipment, etc.			$7,000	$5,000	$2,000
Harwood seedlings (15,450)			$3,040	$2,400	$640
Plants & vegetation			$15,000	$15,000	$0
Planting tools			$4,000	$2,000	$2,000
Seeded Erosion Blankets/erosion equipment			$12,000	$10,000	$2,000
Sediment fences and post			$2,500	$2,300	$200
Filter Bags			$1,200	$1,200	$0
Cable anchors			$2,400	$2,200	$200
Anchor Driver			$450	$450	$0
Power Generator			$375	$375	$0
Stabilizing cables			$2,000	$2,000	$0
Modified Drill			$200	$200	$0
Trash inserts and nets (10)			$10,000	$10,000	$0

Workshops & participant event supplies				$29,333	$27,333	$2,000
Map printing– paper & ink				$5,000	$1,000	$4,000
Distribution of Education Materials				$25,463	$10,731	$14,732
Watershed Signage (stream crossings and canoe trail)				$10,000	$7,000	$3,000
General Office Supplies				$9,999	$4,999	$5,000
Printers & Copiers				$4,113	$3,000	$1,113
Computer & GIS Software and Licenses				$10,000	$0	$10,000
Communication/Education Materials (teachers trainings, class programs, etc)				$45,000	$43,000	$2,000
Media Materials/Events				$25,000	$20,000	$5,000
Raw lumber				$2,000	$1,500	$500
Sand				$4,200	$4,000	$200
Gravel				$5,500	$5,300	$200
Rock for vanes and catchment devices				$11,000	$9,000	$2,000
Lining material for basins				$10,000	$9,000	$1,000
Signage for Restoration plots				$12,000	$10,000	$2,000
Ribbon/markers/paint				$200	$200	$0
Reference Materials				$4,000	$2,000	$2,000
Office Furniture (table, chair, etc.)				$9,000	$0	$9,000
Total Supplies				**$281,973**	**$211,188**	**$70,785**
Other						
City Vans (Transportation for schools)				$6,676	$0	$6,676
Telephone & Internet Services and phones				$7,200	$3,200	$4,000
Perpetual Stream Corridor/ Floodplain Easements (20 acres @$1,000 per acres)				$20,000	$20,000	$0
Video Production for schools				$5,000	$5,000	$0
Web Site (to display student work)				$3,000	$1,000	$2,000
Fourche Survey (500 individuals before and after project)				$12,000	$11,000	$1,000
Restoration Engineering and Certifications - Contracts				$52,000	$42,000	$10,000
Fourche Watershed Exhibit (to be used in workshops)				$4,000	$3,800	$200
Total Other				**$109,876**	**$86,000**	**$23,876**
Project Total				**$2,314,220**	**1,364,698**	**$949,522**
Match					**59%**	**41%**

Appendix 2


Fourche Creek
Watershed
South
Little Rock
Downtown
Little Rock
West
Little Rock
North Little Rock
LITTLE ROCK
ADAMS FIELD
MUNICIPAL AIRPORT
PULASKI CO.
SALINE CO.

APPENDIX 3


University Ave.
I-30
Fourche Creek
I-630
Downtown L. R.
Audubon Center
L. R. Airport

APPENDIX 4

Comprehensive Partners List

Implementing Partners and their Roles

Public Partners

1. **U.S. Environmental Protection Agency (EPA).** The EPA provided funding for the first and second year of Fourche Creek watershed restoration and education as detailed in the proposal. Their funding has been vital to the programs existence.

2. **Arkansas Highway and Transportation Department (AHTD).** Role in project: Audubon is working and will continue to work with department employees to reduce sediment loading at Fourche Creek project sites. Audubon is providing technical assistance with best management practices. (Highway construction is the number one source of non-point pollution in the U.S.) Audubon is also coordinating with the AHTD to provide access to Fourche Creek.

3. **Arkansas Department of Environmental Quality (ADEQ).** ADEQ has an operating budget of $30 million and 361 staff members, 73% of whom have an associate degree or higher. ADEQ protects and enhances the state's environment through regulatory programs, proactive programs and educational activities. ***Role in project:*** ADEQ has committed to technical assistance through its staff; the restoration of riparian areas; and conducting water quality testing before, during, and after the project.

4. **The City of Little Rock.** The Mayor and the Board of Directors of the City of Little Rock have issued a resolution expressing their enthusiastic support for Audubon's Fourche creek restoration and education project. ***Role in project:*** City agency partners include: the *Parks and Recreation Department*s landscape design; support of created wetlands and site restoration; planning and facilitating of educational field events; media events, workshops, and transportation to such events. The *Waste Management Division* -- clean-up and removal of trash collected in the watershed. The *Public Works Division*--restoration mapping and the strategic development of non-point reduction from street and parking lot run-off. These projects are commitments extraordinary to the city's work plan. *The City Maintenance Staff*—assistance with hands on restoration activities, trash clean up events, event staffing, equipment operations, and creek enhancements.

5. **Arkansas Forestry Commission (AFC).** In addition to its other programs, the AFC has a strong information program for kids, teachers and the general public. ***Role in project:*** --providing tree seedlings at or near their cost; provision of technical expertise and manpower in watershed reforestation; assisting and guiding field education workshops with schools; coordination in waste dumping; and law enforcement.

6. **Arkansas Game and Fish Commission (AGFC).** Currently the AGFC is assisting Audubon in the Fourche watershed with aquatic inventory and research assistance**.** ***Role in Project:*** The AGFC will continue aquatic inventory and research assistance; help develop and coordinate a Stream team for Fourche Creek; assist with training and education for volunteers, project partners and area schools. Additionally, the agency will assist in restoration and aquatic habitat enhancement.

7. **Arkansas Natural Heritage Commission (ANHC).** The ANHC maintains a comprehensive database of rare plant and animal species, and high quality natural communities**.** ***Role in Project:*** ANHC's staff of 15 includes specialists in floodplain management and partnerships, scenic rivers and watersheds, entomology, biology, zoology and plant community ecology. This technical expertise is available for the project. ANHC will conduct on-the- ground educational workshops as well.

8. **University of Arkansas at Little Rock (UALR).** UALR is a dynamic metropolitan university with a student population of 11,000 full and part-time students. ***Role in project:*** UALR will provide professors and students for project expertise and manpower. At UALR, three environmental science classes are using the Fourche restoration for class studies. This would continue and expand under the Watershed Initiative grant.

9. **Little Rock School District (LRSD).** The largest district in the state with 25,000+ students, LRSD encompasses 50 schools: 35 elementary, eight middle and five high schools, an alternative learning center and a career technical center. ***Role in Project:*** LRSD and Audubon Arkansas have recently signed a 3-year MOU that outlines how Audubon will provide students and teachers with environmental education opportunities through the Fourche project. The LRSD is committed to providing training for teachers as well. Pilot programs are scheduled for 3 schools: J. A. Fair Environmental Sciences Magnet High, Mablevale Environmental Magnet Sciences Middle School and Otter Creek Elementary (K-5). Students will design and implement actual restoration projects at tributary sites in the Fourche watershed. The program is planned for eventual replication in all LRPSD schools.

10. **Pulaski County Conservation District (PCCD).** One of Arkansas' 75 conservation districts whose mission is the conservation of the state's land and water resources. ***Role in Project:*** Technical expertise in dealing with landowners in conservation easements and other land protection tools.

11. **Pulaski County Cooperative Extension Service (PCCES).** The Cooperative Extension Service, the off-campus arm of U of A Division of Agriculture provides an educational delivery system that reaches every Pulaski County resident. (County population is 361,474). Among other things, the Extension Service has a strong youth outreach program, which includes 4-H. ***Role in Project:*** partnering by allowing access by project education component to their extensive school and youth programs.

Private Partners

12. **Arkansas Watershed Advisory Group (AWAG).** AWAG is a 34-member consortium of state and federal agency personnel and private citizens working to promote voluntary approaches to watershed management and conservation. ***Role in project:*** AWAG's partnership allows the project access to an influential and broad constituency for watershed restoration education/information dissemination.

13. **Arkansas Canoe Club (ACC).** The ACC is a recreational organization consisting of over 450 member households that represent 5 chapters in Arkansas and Oklahoma that love the paddle the rivers streams and lakes of Arkansas and beyond. The ACC has a bi-monthly newsletter, a huge network of paddling partners, local chapter meetings with related programs and a website. ***Role in Project:*** The Arkansas Canoe Club and Audubon partner volunteers will contribute an average of 50 volunteers at 4 hours per year for a minimum period of three years (The canoe club also provides the project with access to an important constituency for support and information dissemination.

14. **The Ross Foundation.** Dr. Joe Nix, who heads the Ross Foundation in Arkadelphia, is a former Professor of Chemistry at Ouachita Baptist University and one of the most respected scientists in Arkansas. ***Role in Project*:** Dr. Nix will advise the project on water quality improvements. As head of one of Arkansas' most prominent foundations, Dr. Nix has the ear of many prominent funders and influential leaders in education in Arkansas.

15. **Audubon Society, Central Arkansas Chapter.** With over 1,500 members in the Little Rock area, this group will be a significant shareholder of the Audubon Nature Center and its long-term watershed education activities. ***Role in project:*** this group helps ensure the long-term sustainability of the watershed restoration project.

16. **Philander Smith College.** Established in 1877, Philander Smith is Arkansas' oldest private historically black college. ***Role in Project:*** provide students and teachers for the educational component and of Audubon's goal to work with underserved and diverse partners and communities. Audubon is conducting a graduate environmental studies program at Philander Smith based on the Fourche Creek restoration project.

17. **Pulaski County Ozark Society.** This 300-member local conservation non-profit is providing volunteers for stream team clean-ups. The Ozark Society also collaborates and participates in restoration and education workshops and events. ***Role in project:*** provision of knowledgeable and committed volunteers to assist in Fourche watershed workshops, demonstrations and clean-up activities.

18. **Sierra Club.** The local chapter of this well-known national conservation group. ***Role in project:*** provide volunteers for clean up team; also provide access to supportive constituencies.

Other Supporting Groups

19. **Arkansas Department of Parks and Tourism (ADPT).** The Arkansas Parks and Tourism is supporting partner of the Restoration and Education efforts within Fourche Creek. The agency strongly feels that this project will have significant improvements to the states ability to draw tourism to its natural areas. Audubon has the Arkansas Parks and Tourism support for this project.

20. **Boy Scouts of America (BSA).** BSA has committed to trash clean ups and work days .

21. **U.S. Army Corps of Engineers (COE).** The Corps of Engineers is a committed partner in the completion of this project and has further committed to expanding the restoration efforts through Fourche Creek Tributaries after this project is completed. The Corps of Engineers is the process of acquiring an additional 400-500 acres to be included in Audubon's restoration program.

22. **Natural Resource Conservation Service, (NRCS) USDA.** This agency has committed its assistance and expertise in the restoration project. Furthermore, they are dedicated to further on-the-ground restoration work and dollars within the Fourche Creek Watershed.

23. **Pulaski County Quorum Court.** The Pulaski County Quorum Court in resolution No. 02-R-48 of September 10, 2002 recognized and expressed gratitude to the Audubon Society for implementation of the Fourche Creek Restoration and Education Project. The Court noted the project would "not only improve the environment, but will also provide financial benefits and recreational opportunities for not only Central Arkansas, but for all Arkansans."

24. **The Ozark Society.** This group will also be a participant in the ongoing trash clean-up efforts of Fourche Creek. The groups will also participate in environmental education programs.

25. **The Nature Conservancy – Arkansas Field Office (TNC).** The Nature Conservancy's Arkansas Field Office has given its full support to Audubon Arkansas' restoration efforts of Fourche Creek. TNC has committed expertise in hydrology, wetland ecology, and botany.

APPENDIX 5

Qualifications of Key Project Staff

Daniel DeVun, Field Staff Coordinator: Mr. DeVun joined the Audubon staff in July of 2002 as the Fourche Creek Field Staff Coordinator. Prior to joining Audubon, Mr. DeVun worked with the Arkansas Soil and Water Conservation Commission in the ground water division. He holds a B.S. in Environmental Science and has a strong understanding for the Fourche Watershed.

Gabe Sewell, Audubon Student Field Staff: Mr. Sewell joined the staff of Audubon in January of 2003. Mr. Sewell is currently completing his B.S. in Wildlife Management at University of Arkansas at Little Rock and has been involved in Fourche fieldwork for over a year now. Mr. Sewell will start full time for Audubon in the spring of 2004, lending his expertise and support in the Fourche Watershed Initiative.

Kelly Neff, Audubon Student Field Staff: Miss Neff also joined the Audubon staff in January of 2003. She is currently completing her Masters in Environmental Science at the University of Arkansas at Little Rock. Miss Neff holds a B.S. in Chemistry and works predominantly on water quality testing and analysis. She will be publishing her Masters Thesis on water quality inventories within the Fourche Watershed.

Ellen M. Fennell. Proposed Role: Communications & Media Support. Ms. Fennell has over 19 years experience in working for international non-profit organizations in the areas of agriculture and the environment. Prior to joining Audubon Arkansas as Director of Development, Ms. Fennell headed her own consulting firm and specialized in fundraising, organizational and program development and public relations. Ms. Fennell holds a B.A. in English from Rhodes College at Memphis.

Mary Miller Smith, Proposed Role: Education-Liaison with Schools and Communities. As Director of Interns and Youth Development for the National Audubon Society, Ms. Smith develops partnerships with schools, colleges, and Audubon centers around the country to promote internships, Audubon-community education linkages and to promote diversity in environmental initiatives. Prior to joining Audubon in 2000, Ms. Smith developed business, corporate, and community partnerships with the U.S. Department of Education in her role as Special Assistant to the Assistant Secretary. Ms. Smith is a former gifted/talented facilitator, grant director, and classroom teacher for 23 years. Ms. Smith holds a B.A. and M.A. in English, a M.S. in Gifted and Talented Education.

Stephanie Hymel, Proposed Role: Financial Administrator. Ms. Hymel has worked as an Administrative Assistant at the Chemung Valley Montessori School in Elmira, New York and as Office Services Clerk and Environmental Scientist at Hanscom Air Force Base in Massachusetts. She has a B.A. degree in English from the University of Arkansas at Little Rock and a M.S. degree in Environmental Science from the University of North Texas. Prior to receiving her M.S. degree, she worked as a Nuclear Medicine Technologist and MRI Technologist.